DRAFT TECHNICAL REPORT

BRIDGE 305 ON SIXTH STREET
SUSSEX COUNTY, DELAWARE
PHASE I ARCHEOLOGICAL SURVEY

DelDOT Contract Agreement 910-12

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ABSTRACT

GAI Consultants, Inc., Monroeville, Pennsylvania, has completed a Phase I archeological survey in association with the proposed Bridge 305 replacement project in Sussex County, Delaware. The Bridge 305 project will involve replacing the existing 6th Street structure over Little Creek and associated roadway and stream improvements. Archeological work for this 0.53-hectare (1.31 acres) project included background research, surface survey, and the excavation of 10 shovel test pits. This report presents a summary of the results of this work.

These investigations indicated that the project area was adjacent to the nineteenth-century "Big Mills" complex. Fieldwork resulted in the documentation of a brick foundation that presumably represents the remains of a mill or related structure. This feature lies outside the project's Area of Potential Effect. No additional structures or features, such as a millrace or milldam were identified. Subsurface investigations indicated that areas within the proposed project right-of-way consist of fill deposits associated with the existing road prism. No intact or truncated surfaces or subsoil were encountered within the project area. Although archeological monitoring was conducted during bridge construction to record any cultural resources located beneath the existing road prism, no such remains were identified. Therefore, no further archeological investigations are recommended along the project corridor.

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I. INTRODUCTION AND PROJECT DESCRIPTION

GAI Consultants, Inc. (GAI), Monroeville, Pennsylvania, completed Phase I investigations of the proposed Bridge 305 replacement project in Little Creek Hundred, Sussex County, Delaware in May 1998. The work, conducted on behalf of the Delaware Department of Transportation (DelDOT), involved background research, systematic surface survey, and shovel testing of the project area. This report presents the objectives, methods, and results of the Phase I investigations.

The proposed project involves the replacement of Bridge 305 on 6th Street over Little Creek in Sussex County (Figure 1). The survey area is located immediately west of the Town of Laurel and encompasses the existing bridge and associated roadway approaches. The survey corridor begins at a point 75 meters (246 feet) west of Bridge 305 (Station 0+180) and terminates at Station 0+390, situated 135 meters (443 feet) east of the bridge for a total linear length of 210 meters (689 feet). Planned construction involves replacing the existing wooden bridge, built in 1949, with a new concrete structure banked with riprap. Tasks for this work will include the construction of new wing walls and abutments, removal of the existing wooden structure, and excavation and shaping of the stream banks where riprap will be installed. In addition, the roadway approaches to the new bridge will be adjusted and repaved. This work will take place within the existing 25-meter (82 feet) wide ROW which encompasses roughly 0.53 hectares (1.31 acres). The Area of Potential Effect is defined as all areas within the ROW that will be impacted by proposed construction activities.

Background research provided a means for assessing the survey area's sensitivity for containing archeological resources, and generated appropriate environmental, prehistoric, and historic contexts to interpret any resources identified during the survey. GAI conducted an initial site inspection to modify preliminary assessments of resource sensitivity, to locate surface features and archeological deposits, and to identify locations that could be omitted from subsurface investigations due to poor drainage, excessive slope, or disturbance. Subsurface investigations entailed systematic shovel testing in portions of the project area to locate below-ground archeological deposits and features. Due to disturbance from the road prism (above the existing tidal marsh), steep terrain, and standing water, no shovel testing was conducted east of Bridge 305.

Fieldwork indicated that much of the survey area crossed through tidal marsh on the margins of Little Creek; the existing approaches to Bridge 305 are built upon a causeway. The brick foundation to a possible nineteenth-century mill was identified north of the project ROW, outside the limits of construction. Shovel testing within the ROW exposed modern fill deposits to depths of over one meter. No buried historic or prehistoric surfaces were encountered, nor were any artifact deposits or features associated with the brick foundation. The location of this feature with respect to a historic millpond, however, suggests that features related to the former mill complex may lie buried below the existing bridge and road prism.

Ben Resnick served as Project Manager for the Phase I survey. Bradford Botwick was the Principal Investigator and Kimberly Parsons acted as Field Director. Field crew members included Kristen Carey, Edward Miller, Steven Sarver, and Brent Schreckengaust. Geoffrey Henry performed the background research.

The work described in this report was performed pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (36 CFR Part 800). The study conforms to standards set forth in *Guidelines for Architectural and Archeological Surveys in Delaware* (Delaware Historic Preservation Office 1993) and those contained in the *Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation* (Federal Register 48:190:44716-44742).

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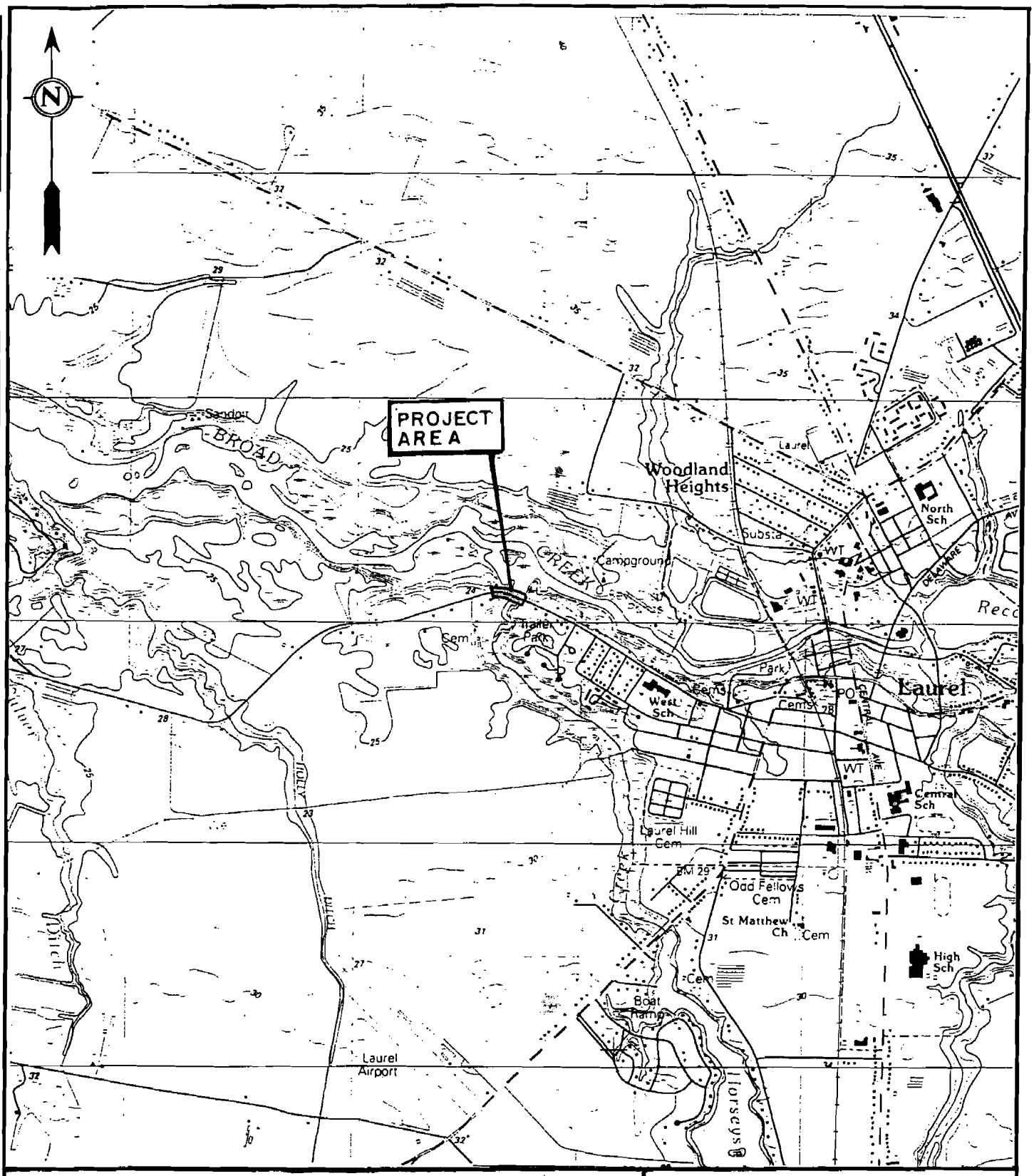

SCALE
0 1000 2000 FT

SOURCE :
USGS 7.5 MIN. SERIES,
LAUREL, DEL., QUAD. (1992)

FIGURE 1

BRIDGE 305
PROJECT LOCATION

II. Environmental Setting and Cultural Context

Environmental Setting

Located in the southwestern portion of Sussex County in Little Creek Hundred, the Bridge 305 project area lies in the Low Coastal Plain physiographic zone of Delaware. This region is underlain by sands of the Columbia Formation and is marked by a nearly flat and featureless surface. Transitions in elevation are generally accomplished through gradual slopes. Surface water systems are tidal in their middle and lower reaches; the project area is flanked by tidal marsh. The underlying geologic units in this region consist of unconsolidated materials derived from alluvial and marine processes.

The project area spans the mouth of Little Creek where it empties into Broad Creek. The banks of both watercourses exhibit moderate to steep grades and represent the principal topographic features in the survey vicinity. Elevations in the project area range from sea level along the streams to a maximum of under 10 meters (32.8 feet) in the adjacent uplands.

The project area is in the Chesapeake Bay drainage basin. Broad Creek, a major tidal tributary of the Nanticoke River, comprises the chief watercourse in the immediate project vicinity. The Broad Creek valley in the survey area vicinity is relatively wide and is flanked by gently to moderately sloped banks. In addition, discontinuous marshes occur along the drainageway. Little Creek, a mid-order tributary of Broad Creek, flows into the larger stream immediately north of the Bridge 305 crossing. The lower reach of Little Creek is tidal; it narrows to a perennial drainage bounded by a continuous belt of marsh and low steep banks. Horseys Pond, located 1.5 kilometers upstream from the project area, comprises an artificial impoundment of this stream. Custer (1984:25-26) points out that tidal systems such as these combined a range of environments and would have presented significant sources of food and other resources for prehistoric inhabitants.

Soils in the general project region belong to the Evesboro-Rumford association consisting of excessively drained and somewhat excessively drained soils that have a rapidly permeable subsoil of sand to sandy loam. Soils in the immediate survey area are mapped as Evesboro sandy loam, which occur on the banks of Little Creek, and Johnston silt loam, which flanks the streams (Figure 2). This latter material consists of very wet, very poorly drained soils on flood plains that formed in recent accumulations of sediments and organic matter. Evesboro soils, in contrast, are deep, excessively drained soils on uplands that formed in old dune-like ridges (Ireland and Matthews 1974:15, 18). Because these soils are not accretionary, they probably do not contain deeply buried primary archeological deposits. Johnston soils are not likely to contain primary archeological deposits because they are poorly drained and affected by ongoing developmental processes.

Land use in the project vicinity has included the historic development of Little Creek as a mill seat during the nineteenth century. Recent land use consists of residential development; early twentieth-century dwellings are located immediately adjacent to the survey corridor west of Little Creek. Roadside areas exhibit both cleared areas with grass cover and stands of forest with a dense understory.

Cultural Context

Prehistoric Context

Custer (1984, 1989) and Dent (1995) recently presented general prehistoric overviews of Delaware and the Delmarva region. The prehistoric period of Delaware is divided into four principal periods by Custer (1984, 1989) that correspond to specific environmental and sociocultural developments: Paleoindian (12,000-6500 BC), Archaic (6500-3000 BC), Woodland I (3000 BC-AD 1000), and Woodland

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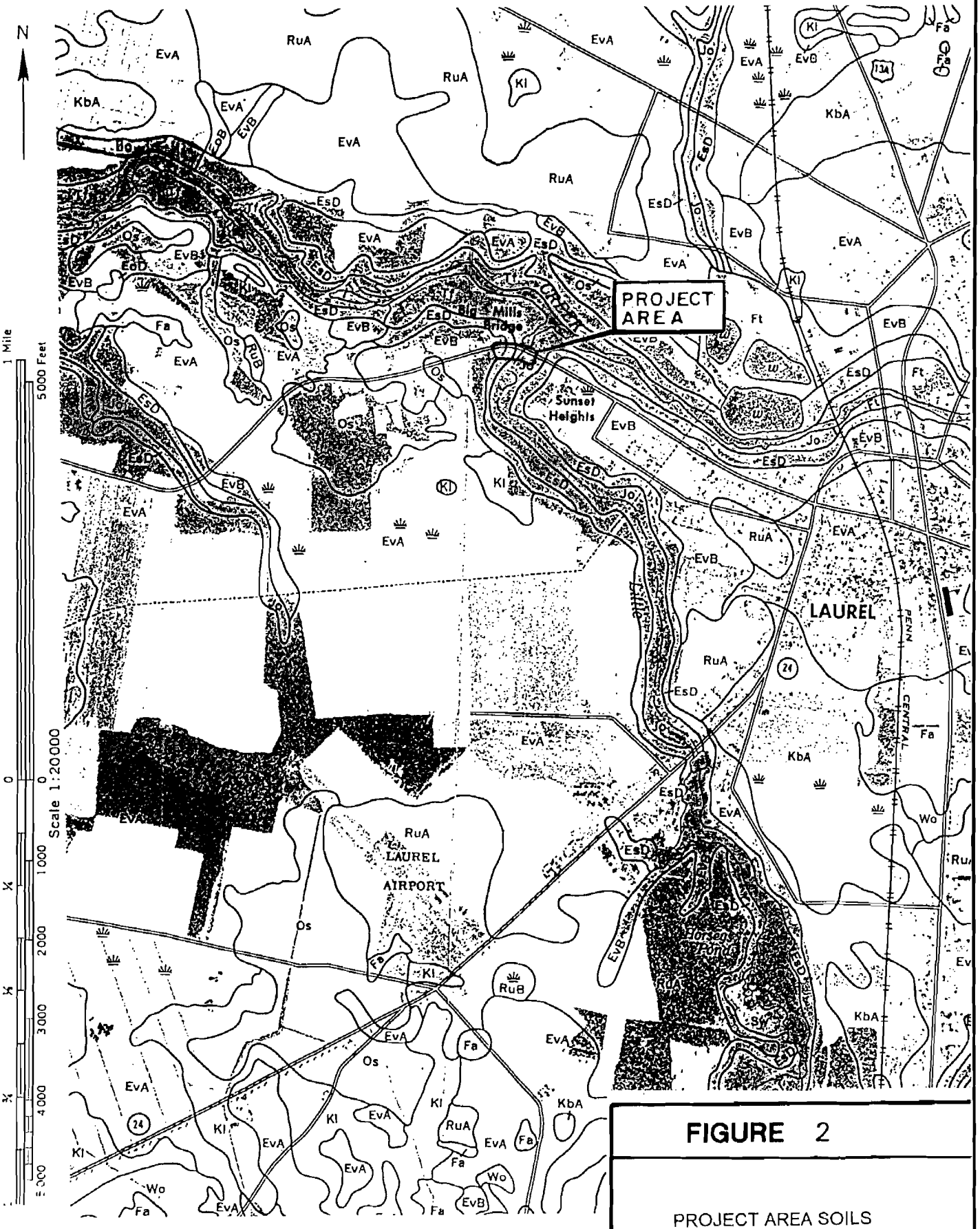

SOURCE:
IRELAND AND MATHEWS (1974)

FIGURE 2

PROJECT AREA SOILS

II (AD 1000-1600). The Woodland I and Woodland II periods are further subdivided into temporal/spatial complexes characterized by specific adaptations (Custer 1984:28).

Paleoindian

The Paleoindian period refers to the earliest recognized human populations in Delaware. Custer (1984, 1989) correlates this period with late Glacial, Pre-Boreal, and Boreal climatic episodes, and asserts that early cultures in the region reflected adaptations to the distinct circumstances associated with these environments. In the Delmarva region, these societies have been characterized as mobile hunter-collectors organized into band-level social groups.

Paleoindian sites are distinguished by fluted and lanceolate projectile point types associated with lithic tool kits that appear to be oriented around the acquisition and processing of large game animals. Recent evidence indicates the use of plant foods by Paleoindian period groups as well. The relative percentages of the Paleoindian diet composed by hunted as compared to collected foods is not clear, however (Dent 1991, 1995; Kauffman and Dent 1982; Lee Decker et al. 1996). Researchers in the Middle Atlantic region have suggested that the Paleoindian settlement system was focused on sources of high-quality lithic materials (Custer 1984; Custer et al. 1983; Gardner 1974; Lowery 1989:161). This focus would have been less apt in Coastal Plain zones where sources of high quality materials do not occur in discrete locations, but are found as secondary deposits along with materials of lesser quality (Custer et al. 1983). It is probable, as well, that lithic source quality has been overemphasized as a principal determinant of Paleoindian settlement in the region (Childress and Vogt 1994; Dent 1995). Therefore, Paleoindian settlement in Delaware more likely reflects a serial settlement model in which sites are located near locations that offer a variety of food resources, such as interior wetlands, swamps, and bogs (Custer 1984, 1990; Custer et al. 1983). In this model, procurement of toolstone from dispersed lithic sources was embedded in the seasonal travels of Paleoindian groups that were dictated by the availability of food resources. Site types expected to reflect Paleoindian occupations include large and small base camps, situated in locations of maximum resource overlap, hunting sites, and isolated point sites (Custer 1984:52-53; 1989:99-100).

Archaic

The succeeding Archaic period corresponds to the Atlantic climatic episode, characterized by warmer average temperatures and essentially modern floral and faunal communities (Custer 1984, 1989). Social groups of this period have been characterized as mobile, adapting to an emerging and diverse resource base. Subsistence strategies were unspecialized and emphasized the use of a wide range of food resources (Custer 1984, 1989, 1990). Settlement patterns reflect this postulated subsistence strategy. Sites occur in association with newly appearing environmental zones, such as developing swamps and marshes (Custer 1984). Three site types are suggested for this period. The largest type is the macroband base camp, occupied seasonally by multiple families in settings at the junctures of environmental zones. Such locations maximized resource overlap. Found in similar settings, microband base camps are somewhat smaller. They are also occupied seasonally by individual or small numbers of families. Finally, procurement sites that were occupied to obtain and process resources occur as well. These camps were established briefly during forays from one of the other site types (Custer 1984:67, 1989:129-130). Archaic sites are distinguished by particular bifurcated projectile point forms, as well as a wider array of tool types than is evident for the preceding period. Also, Stewart (1989) noted an increased use of local lithic raw materials, particularly rhyolite, during this period.

Woodland

The Woodland I period encompasses an era of increasing social complexity and a greater degree of sedentary settlement. In a summary of this period, Custer (1984:77) asserts that it is marked by intensified use of estuarine and riverine environments that permitted the establishment of large macroband base camps; the appearance of foraging and collecting subsistence strategies in zones away from estuarine and riverine environments; broad exchange networks; and population growth. Also characteristic of this period are the recognition of distinctive culture complexes that have temporal and regional affinities. Diagnostic artifacts of the period, as defined by Custer (1984), include narrow bladed stemmed points,

broad-bladed points, triangular points, and others. In addition, container technologies appear during the Woodland I period. The earliest of these are carved steatite bowls, which appear as early as 1900 BC. In about 1200 BC they are superseded by ceramic technology. Settlement systems of the Woodland I era, according to Custer (1984:96), reflect reduced mobility and higher numbers of large macroband base camps. Such sites were used more intensively and for longer periods than those of the Archaic period. During the Woodland I period, macroband base camps are situated to take advantage of specific and predictable resources, such as annual fish runs. Microband base camps of this period also occur, along with procurement sites. Greater social complexity is suggested by the need to coordinate the procurement, processing, and distribution of the food resources obtained at the macroband camps. The exchange networks evident during this period also suggest that some form of social hierarchy had begun to develop.

The Woodland II period is distinguished primarily by increased sedentism and the introduction of horticulture. In addition, exchange networks that flourished during the Woodland I disintegrate. The period is also marked by triangular projectile point varieties in combination with distinct pottery types (Minguannan and Townsend ceramics). In the southern Delmarva region, settlement systems are marked by semi-sedentary villages that exhibit evidence of increased food storage facilities (Custer 1984, 1988; Thomas et al. 1975). The macroband base camps are larger than in preceding eras. Also, they are more often situated along the floodplains of major rivers, which provided suitable soils for horticulture (Custer 1984:148; Custer and Griffith 1986:36; Rountree and Davidson 1997:23). In the northern Delmarva peninsula, sites identified as macroband base camps do not typically exhibit evidence for structures, storage features, or middens. Locations of these sites often relate to environmental settings that are rich in subsistence resources, such as brackish water marshes, floodplains, and sink hole complexes (Stewart et al. 1986:59, 63). Seasonal base camps and procurement sites also occur within the Woodland II settlement system, indicating, first, that seasonal fissioning of larger social units persisted, and, second, that horticulture only formed a part of the subsistence base (Custer and Griffith 1986:45-46). Based chiefly on historical data, by the late Woodland II period, societies on the Delmarva peninsula may have been organized hierarchically (Rountree and Davidson 1997).

Contact Period

The Contact period encompasses the transition from the Woodland II period to the historic era. Europeans explored the region during the sixteenth century. By the 1620s, they began to trade with aboriginal societies of the eastern shore, and by the 1630s, the Swedish and Dutch established settlements on Delaware Bay (Davidson et al. 1985:43; Hoffecker 1977; Munroe 1978, 1993; Weslager 1988). This period is marked in the archeological record by the addition of European trade goods to otherwise characteristic Woodland II assemblages. Eventually, interaction with Europeans and subsequent colonization of the region led to the disruption of native societies and ultimately to the depopulation of the Delmarva peninsula by aboriginal inhabitants (Custer 1984, 1989; Rountree and Davidson 1997).

Historic Context

The following overview is abstracted largely from histories prepared by Hoffecker (1977) and Munroe (1954, 1978, 1993), and the summary presented in De Cunzo and Catts (1990). In their management plan for Delaware historic archeological resources, De Cunzo and Catts (1990) divide Delaware's history into five chronological periods: (1) 1630-1730; (2) 1730-1770; (3)1770-1830; (4) 1830-1880; and (5) 1880-1940.

European settlement of Delaware began in the 1630s and involved Swedish and Dutch efforts to colonize locations along the Delaware River. Fort Christina, located at the junction of Brandywine and Christiana Creeks, became the focus of a small population of farmers and traders. Early Dutch activity in this area consisted of establishing military settlements in response to Swedish and English land claims. Fort Casimir (present-day New Castle) was developed in an attempt to blockade Fort Christina. When the English obtained control in the 1660s, the region contained a small population of settlers of Swedish,

Finnish, Dutch, English, and African descent (De Cunzo and Catts 1990:9-10; Munroe 1978, 1993; Weslager 1988). By 1666, Somerset County (Maryland) was established extending to the Eastern Shore including all the land from the Virginia line to the Nanticoke River incorporating the southern part of Sussex County. Settlement at this time consisted of dispersed farmsteads, focused on subsistence agriculture, distributed along the Delaware River and its tributaries. Later, as area farmers were incorporated into Philadelphia's hinterland, they shifted to the production of market crops, such as wheat, for export to Philadelphia and the West Indies. Animal husbandry and forest products constituted other important aspects of the economy. Small rural hamlets, which developed at this time, provided services such as mills, smiths, taverns, and stores (De Cunzo and Catts 1990:10).

De Cunzo and Catts (1990:11) characterize the 1730 to 1770 period as one of population growth and agricultural and commercial expansion as reflected in the development of towns, regional transportation systems, and industry. Increased immigration from England and Ireland occurred prior to the middle of the eighteenth century affecting the ethnographic character of the region. Towns were located along major waterways serving as principal routes of transportation and communication. Roads were poorly maintained and served as a secondary means of transportation during this period. Villages continued to develop as centers for local economic and social exchange providing a diverse array of services for regional inhabitants. The economy of this period was dominated by agriculture, with farms in northern present-day Delaware involved in market production, while the southern region focused chiefly on subsistence farming and the exploitation of local forest products. The latter region also relied on the success of local shell and fin fisheries (De Cunzo and Catts 1990:11; Munroe 1978:198, 200).

Agriculture remained dominant between 1770 and 1830, although soil erosion led to an out migration of a large portion of the population during the 1820s and 1830s. Unproductive and vacated properties were incorporated into larger landholdings, contributing to an increase in average farm size at this time. In the north, wheat and dairy became the chief agricultural products whereas in the south, corn was dominant, while cattle and swine were important subsidiary products. Commerce and manufacturing grew in the state during this period. This included the development of textile, snuff, and fulling mills along with existing gristmill and sawmills in the northern part of the state. Economic activities in the south included distilling and iron manufacture, home production of linen and wool, and the manufacture of forest products. Towns continued to serve as important centers for local and regional economic and social exchange. Although water remained the principal means of transport, the development of turnpikes and canals at this time revolutionized transportation. These produced impacts to the landscape and settlement patterns, particularly in the northern part of Delaware (De Cunzo and Catts 1990:17-18; Hoffecker 1977:42-43; Munroe 1954).

De Cunzo and Catts (1990:21) note that industrialization, urbanization, and transportation had significant impacts on the region between 1830 to 1880. In the north, agriculture underwent a revival with the application of soil conservation practices, new farming techniques, and crop diversification. In the south, corn and livestock persisted as the main and secondary crops, respectively. While roads and waterways continued to serve as major transportation links, the creation of railroad lines had positive economic consequences for the success of agriculture and industry in the region. Industry flourished during this period, taking advantage of improved and less expensive modes of transportation, a large labor supply, and the greater availability of raw materials (De Cunzo and Catts 1990:21-22).

From 1880 to 1940, manufacturing increased in relative importance to agriculture, while the latter was marked by shifts in the types of products cultivated. More diverse and perishable crops were developed for urban markets along with dairy and poultry production. Industry was tied more closely to northern Delaware, with an emphasis on light manufacturing and food processing (e.g., canning). Urbanization proceeded in the north, and transportation continued to improve, enhancing links within, and beyond the region. In southern Delaware, forest products continued to provide important sources of income (De Cunzo and Catts 1990:27-28).

III. ARCHEOLOGICAL RESOURCE POTENTIAL

INTRODUCTION

GAI conducted background research to develop appropriate environmental and cultural contexts for the survey area, to identify previously recorded cultural resources within or near the project location, and to establish a basis for evaluating the archeological resource potential of the project area. Background research included a review of pertinent primary and secondary sources of information, as well as cultural resource inventory files and survey reports at the Delaware State Historic Preservation Office, the Hall of Records (Delaware State Archives), and DelDOT, Dover; the Library of Congress in Washington, D.C.; and other local and regional historical societies and libraries.

PREHISTORIC SITES

A review of cultural resource survey files at the Delaware State Historic Preservation Office indicates that eight prehistoric archeological sites have been previously identified within 1.6 kilometers (1.0 mile) of the survey area (Table 1). Based on the inventory forms, these sites consist of small artifact scatters representing brief or transitory occupations. Each site is located in proximity to existing watercourses and most lie adjacent to water. While some of these sites are situated at stream confluences, this does not appear to be a critical factor in site selection. This pattern accords with analyses of settlement data for southwestern Delaware (Custer 1984; Custer and Millen 1989). The site file data further suggests that prehistoric populations used the immediate project vicinity for resource procurement rather than for residential activities. To date, the closest base camp to the project area consists of a Woodland I site located just over 1.6 kilometers (1.0 mile) downstream in the vicinity of Bethel. That such sites have also been identified upstream from the project area indicates the potential occurrence of a base camp or other residential site in the general survey vicinity.

TABLE 1
Previously Recorded Archeological Sites
Within 1.6 Kilometers of the Bridge 305 Project Area

SITE #	CHRONOLOGICAL PERIOD (AND REPORTED ARTIFACTS)	SETTING	INTERPRETATION
7S-H-28	Woodland I (Dames Quarter, Mockley ceramics, FCR)	low terrace of Broad Creek	processing camp
7S-H-31	Woodland I (cobbles, flake tool, gorget)	low ridge adjacent to Holly Ditch	processing camp
7S-H-32	Woodland II (Townsend pottery, FCR)	rise on upland flat adjacent to Broad Creek	processing camp
7S-H-33	Woodland II (Townsend pottery, flakes)	rise adjacent to Broad Creek	processing camp
7S-H-34	Unidentified (flakes, FCR, flaked tool)	bluff adjacent to Broad Creek and unnamed tributaries	processing camp
7S-H-35	Woodland I and II (Townsend pottery, biface, FCR, flakes)	bluff adjacent to Little Creek	processing camp
7S-H-36	Unidentified (flakes, tool)	bluff adjacent to Little Creek	processing camp
7S-H-37	Unidentified (FCR)	rise on bluff adjacent to Little Creek	processing camp

With respect to chronology, previous surveys suggest that Paleoindian and Archaic period sites are found infrequently in the region while Woodland I and Woodland II sites are more numerous,

suggesting more intensive use of this area during these periods (Custer and Millen 1989:28-31). The project area spans level bluff edges of both Broad Creek and Little Creek. Such settings have produced Woodland period prehistoric sites. Site types most likely to be found include sparse resource procurement/ processing camps; however, evidence for a more intensive residential occupation might also be located in the general project area.

HISTORIC SITES

No historic archeological resources have been previously identified in the project vicinity. A review of archival and historic map data, however, provides a basis for evaluating the survey area's sensitivity for containing such resources. Orphans Court records, dated 1803, discuss the apportionment of land at the confluence of Little Creek with Broad Creek. An associated survey map illustrates two structures in this location (Figure 3). One of these structures, labeled "Big Mill," appears to represent a two-story structure with a gable roof. The second smaller structure to the east is simply described as a "grist mill."

The location of the above structures with respect to Little Creek is somewhat problematic (Figure 3). In 1803, the Orphans Court assigned the land to Thomas Townsend (Orphans Court Record I-J:7-9). By the second half of the nineteenth century, this location had developed into a small milling complex. The Beers Atlas of 1868 depicts a series of buildings along the road crossing at Little Creek, labeling the area "Big Mills" (Figure 4). Two of the illustrated structures are recorded as "S. Mill" and "G. Mill." These refer to a sawmill and gristmill, presumably the two buildings depicted on the 1803 Orphans Court Survey (Figure 3). According to Moore (1959:5), the sawmill employed 10 men processing 5,000 feet of lumber per day. A tannery is also depicted further to the east, east of Little Creek (Figure 4). The Beers Atlas clearly depicts a dam and millpond immediately south of the present bridge.

Little Creek Hundred contained a wealth of gristmills and sawmills during the eighteenth and nineteenth centuries (Moore 1959:4). Prior to 1800, at least 30 ravines in Little Creek were dammed providing water power for no less than 50 mills. Scharf's *History of Delaware* (1888:1320) notes that Barkley Townsend prior to 1843 built Big Mills when the current owner of the property, William Ross, added a tannery to the mill complex (Figure 4). Scharf also states that a basket factory operated at the site in connection with the sawmill between 1881 and 1884. Moore (1959:5) notes that it was A.J. Horsey who used the water power from the millpond to operate the crate and basket factory. Horsey was also responsible for the operation of the tannery at this location.

Operation of both the sawmill and gristmill had come to an end by circa 1885 (Scharf 1888:1320). This decline is evident in the 1915 USGS topographic map, which depicts only a single structure at Big Mill (Figure 5). This structure lies on the west side of Little Creek, north of the road, in the approximate location of an extant brick foundation. None of the other previously documented structures are evident nor is the millpond extant. Finally, a set of 1948 highway construction plans suggest that the existing road alignment took shape during the mid-twentieth century. It should be noted that these maps also show a one-story frame house north of the road, which corresponds to a structure, illustrated on the 1915 map, west of the above noted brick foundation. The map depicts another dwelling, built after 1915, located directly south of the aforementioned frame house (State Highway Department 1948).

A review of Kennel's (1990) survey of historic millponds in the Nanticoke River drainage indicates that "Big Mills" contained a large pond in 1850. He also identified the existing brick foundation to the old mill downstream from the (existing) wooden bridge. Kennel (1990:17-18) states that the earthen dike that supports the present road and bridge could incorporate a dam. He suggests that the original road/bridge crossing of Little Creek was located approximately 183 meters (600 feet) upstream (south) from the existing structure. This is consistent with the depiction on the 1868 Beers Atlas (Figure 4) of a dam/millpond south of the present bridge. It should be noted that the existing bridge has been recorded as part of the Delaware Historic Bridges Survey and was recommended not eligible for listing in the National Register of Historic Places (A.G. Lichtenstein and Associates, Inc. 1996).

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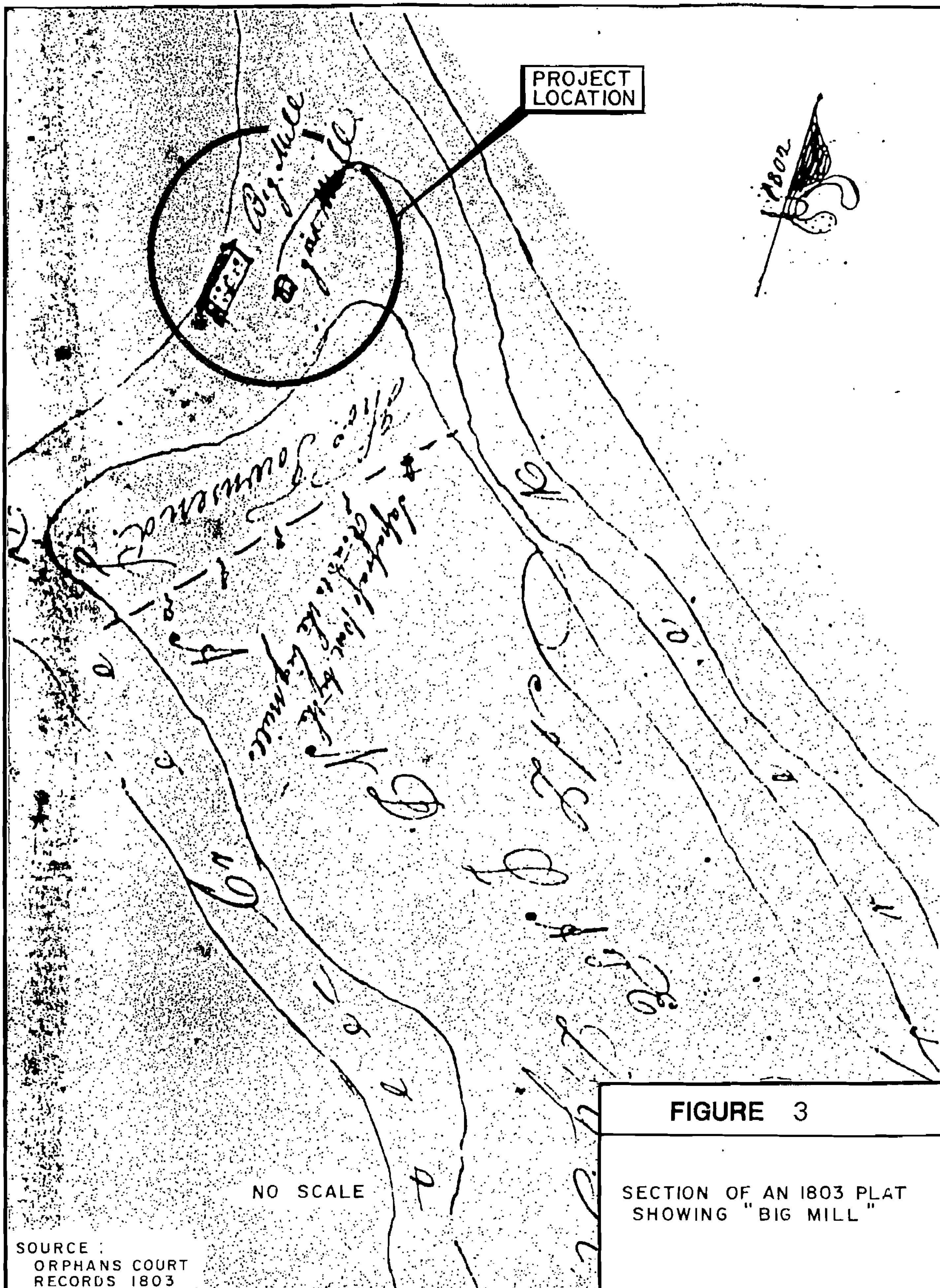

FIGURE 3

SECTION OF AN 1803 PLAT SHOWING "BIG MILL"

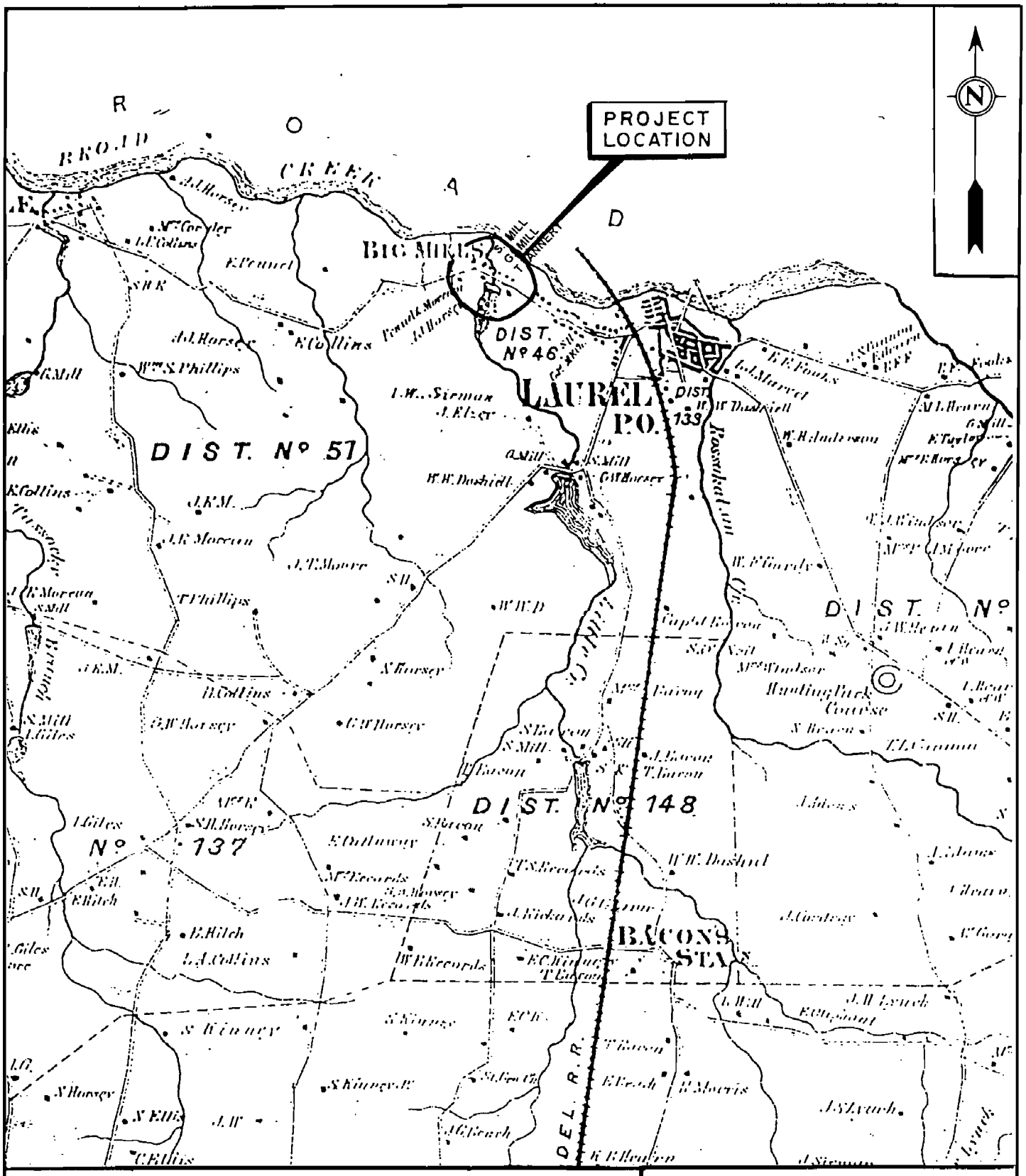

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FIGURE 4

SOURCE :
BEER 1868 (KENT COUNTY, DEL.)

SECTION OF BEERS 1868 MAP SHOWING STRUCTURES IN THE BRIDGE 305 PROJECT VICINITY

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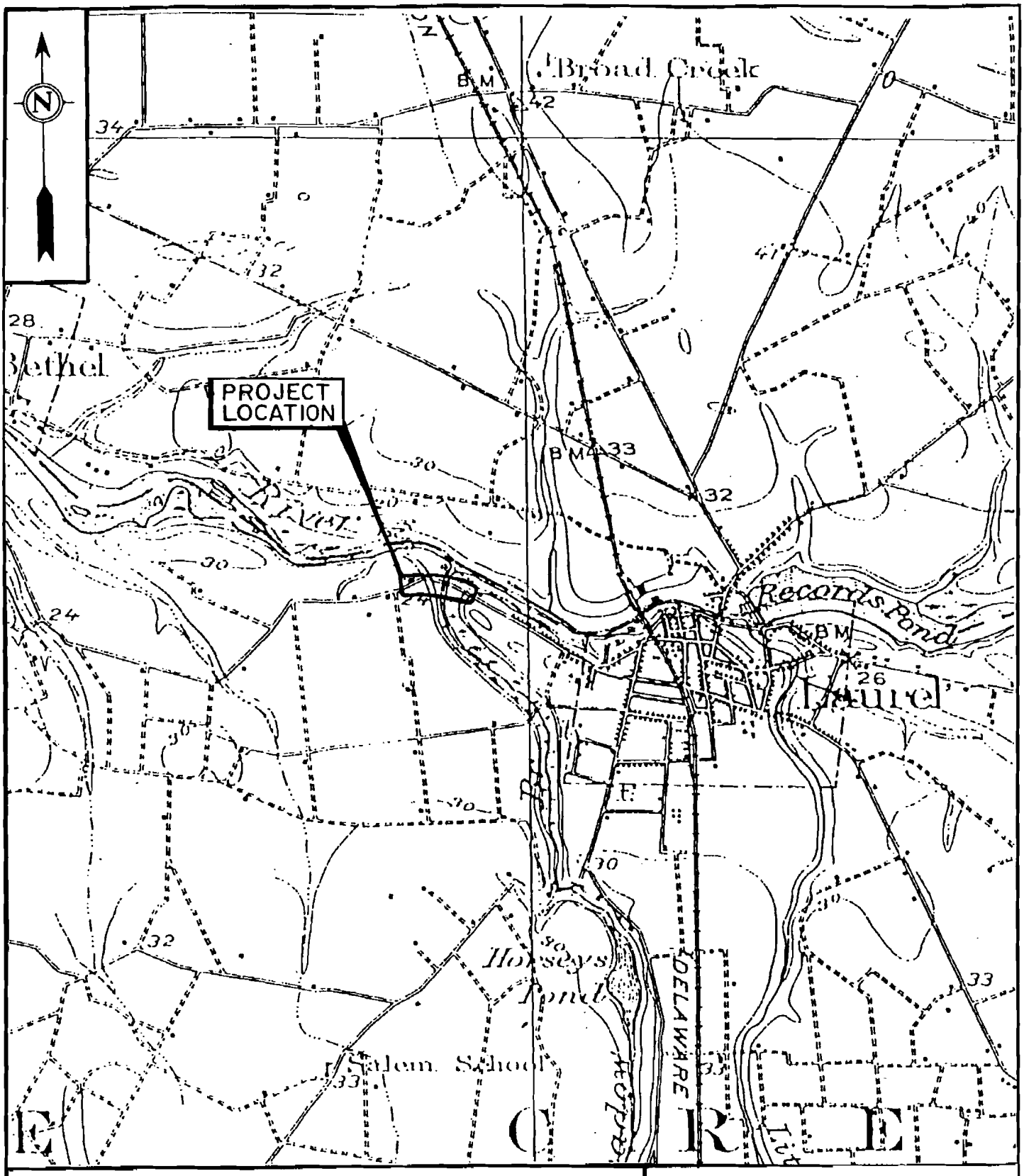


FIGURE 5

NO SCALE

THE BRIDGE 305 PROJECT AREA IN 1915

SOURCE : USGS 1915

The above documentation indicates that the Bridge 305 project area served as a mill complex from the late eighteenth to late nineteenth- to early-twentieth century. In conjunction with the extant stone foundation identified directly northwest of the bridge, the project area exhibits a high potential for containing historic archeological resources. In particular, the stream crossing may contain evidence of a dam, race and/or sluiceway, while the stream banks and road margins could contain associated cultural deposits and features.

IV. ARCHEOLOGICAL INVESTIGATIONS

FIELD METHODS

Phase I field work included an initial pedestrian reconnaissance followed by systematic subsurface survey. GAI conducted the walkover inspection to confirm or modify the preliminary assessments for archeological resource sensitivity. In addition, the pedestrian reconnaissance served to identify surface features or archeological deposits, and to delineate areas that could be excluded from further survey due to excessive slope, poor drainage, or disturbance. Results of the surface reconnaissance were mapped, described in field notes, and photo-documented.

GAI excavated systematic shovel test pits (STPs) along transects at 15-meter (49.2 feet) intervals in areas containing potentially undisturbed cultural deposits and features. When archeological materials were encountered, radial STPs were excavated at cardinal points to obtain preliminary information on the horizontal extent and integrity of deposits. In certain instances, GAI placed close-interval STPs (5 meters [16feet]) in proximity to structural features identified during the surface reconnaissance to ensure that any deposits associated with such features were adequately sampled. Transects were assigned alphabetic designations; shovel test pits received numeric designations.

STPs measured roughly 50 centimeters in diameter and were excavated by hand following natural soil stratigraphy. Each STP was excavated at least 10 centimeters into natural subsoil (where encountered) or to depths sufficient to ascertain the condition of the natural soil profiles, if possible. All excavated soils were passed through 1/4-inch mesh hardware cloth for systematic artifact recovery. When recovered, GAI archaeologists recorded artifacts separately according the natural stratum that produced them. A standard GAI Shovel Test Form was completed for each excavated STP, noting soil descriptions, depths of horizons, and the presence of cultural materials. The locations of all STPs were recorded on project plan maps that also depicted the project ROW, the locations of features, modern structures or features, and other relevant data.

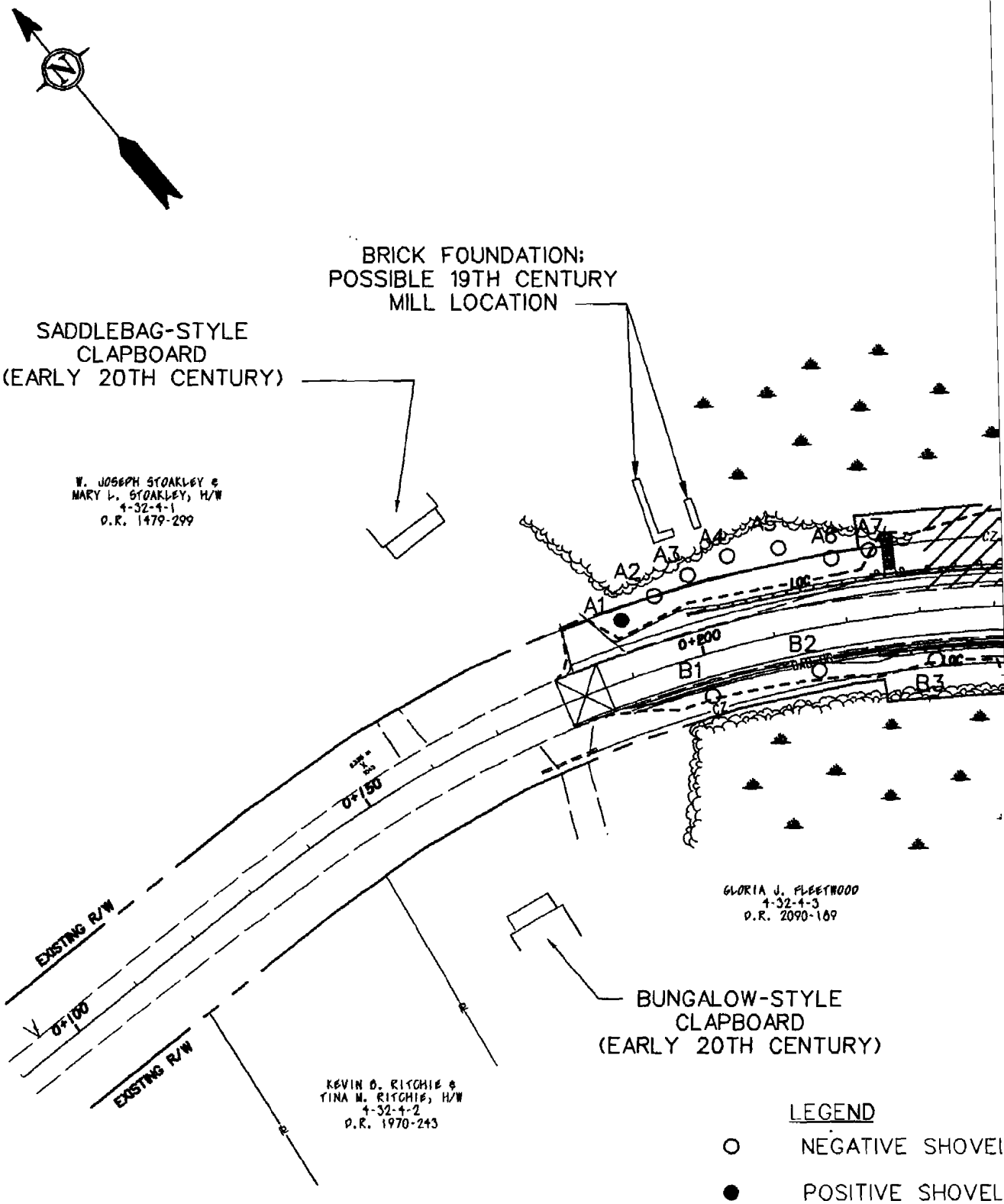
LABORATORY METHODS

The archeological survey generated only a small number of artifacts, all of which consisted of non-diagnostic materials recovered from fill deposits. These items were identified, tabulated, and discarded in the field.

RESULTS

GAI conducted fieldwork for this project on May 6, 1998. These investigations entailed a surface reconnaissance and the excavation of 10 systematic shovel test pits within the project ROW. The reconnaissance indicated that all portions of the project area east of Bridge 305 crossed through tidal marsh as did the area immediately west of the bridge (between Stations 0+230 and 0+250) (Figure 6). Within these areas, immediately north and south of the road, the terrain dropped downward to a low, marshy ground associated with the margins of Broad Creek and Little Creek (Photograph 1). The 6th Street roadbed formed a causeway through this area extending from the terrace east of Little Creek. In conjunction with the poor drainage and apparent absence of archeological resources, this portion of the APE was omitted from subsurface investigations (Figure 6).

During the surface reconnaissance, the mill remains noted by Kennel (1990) were identified northwest of the existing bridge. They consist of segments of two opposing mortared brick walls at Station 0+200 located within the tidal marsh 6.5 meters (21.3 feet) north of the existing ROW (north of the road). These segments likely constitute the foundations and wall to a 7-meter (23 feet)-wide building of indeterminate length; the structure continues north into the adjacent marsh (Figure 6). The longest extant section measures 8.6-meters (28.2 feet) long and is oriented roughly north-south. This wall remnant reached a height of 2 meters (6.6 feet) above grade and terminated in a series of four "piers" forming



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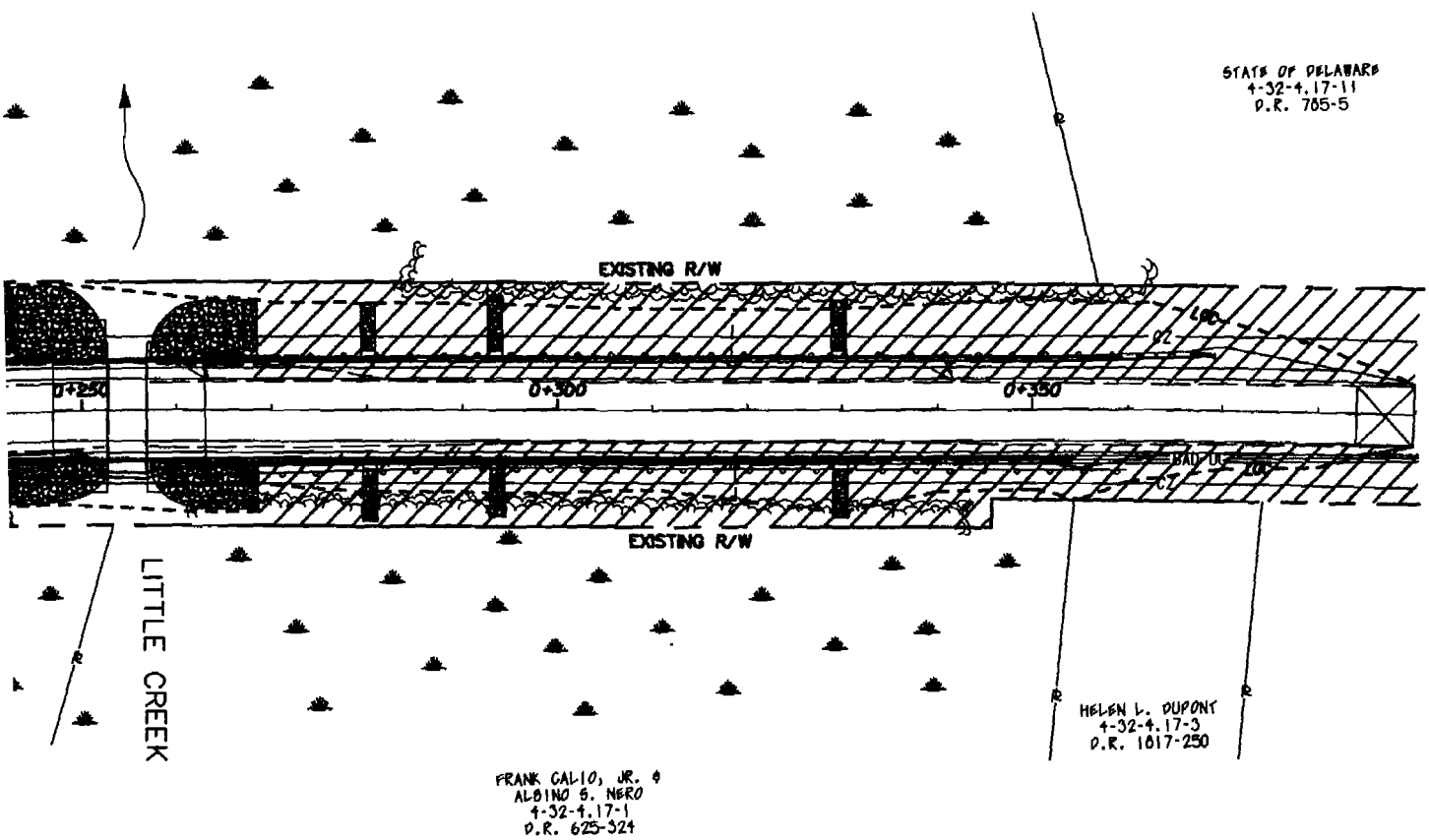
GDI CONSULTANTS, INC.



. TEST

TEST

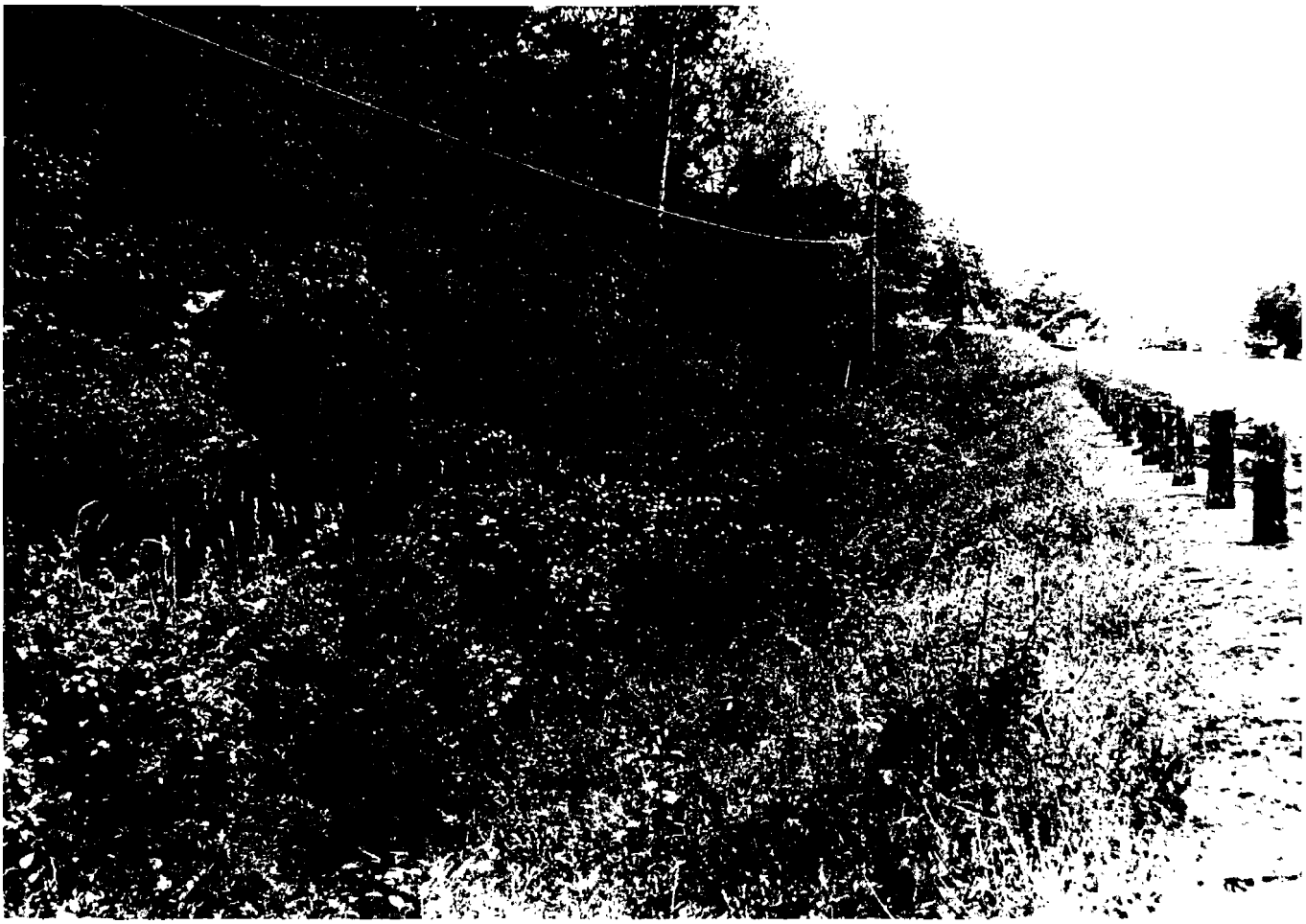
FROM SUBSURFACE
DISTURBANCE/FILL
TER

RUCTION

0 20m 40m

FIGURE 6

PLAN OF EXCAVATIONS,
BRIDGE 305 PROJECT AREA



Photograph 1. Typical Slope and Marsh Adjacent to the Survey Corridor. Looking East.

several embrasures. Vertically embedded into the top of each "pier" was a threaded iron bolt, likely intended to fasten a wooden superstructure (Photograph 2). No associated structures or features were identified in the area of the brick remains. As noted above, the 1868 Beers Atlas (Figure 4) depicts a millpond south of this location on the opposite side of the road. The millrace/sluiceway would have therefore intersected the road. Alternatively, the road could have spanned the top of a later milldam. It is thus possible that that the remains of a milldam or race are present beneath the existing roadway.

Ten systematic shovel test pits were excavated between Stations 0+180 and 0+230 (Figure 6) (Photograph 3). Three of these STPs were placed at 15-meter (49.2 feet) intervals along the south side of 6th Street. The remaining shovel tests were placed at 5-meter (16.4 feet) intervals in close proximity to the mill ruin on the north side of the road. Shovel testing consistently exposed deep modern fill deposits along both sides of the road within the project corridor. Representative profiles consisted of shallow topsoil deposits of dark grayish brown loamy sand fill overlying thick fill deposits measuring no less than 70 centimeters (2.3 feet) to one meter (3.3 feet) in depth (Figure 7). Occasionally, these deposits contained road gravel and modern artifacts. Four artifacts were collected during fieldwork, all from Shovel Test A-1 (Figure 6). These included one glass fragment, one brick fragment, and two unidentifiable metal fragments from fill soils and do not constitute significant cultural resources. The artifacts were discarded in the field.

Other than the mill ruin, no evidence of buried historic or prehistoric surfaces or features were identified during archeological fieldwork. Further, none of the excavated shovel tests yielded any artifacts or soil anomalies that could be attributed to the historic mill occupation, historically-documented resources, or prehistoric use of the project area.

Photograph 2. Brick Ruin Identified as Possible Mill Structure. North Side of Project ROW. Looking Northwest.

Photograph 3. Area Selected for Shovel Testing at the Western Terminus of the Project Area. Looking East.

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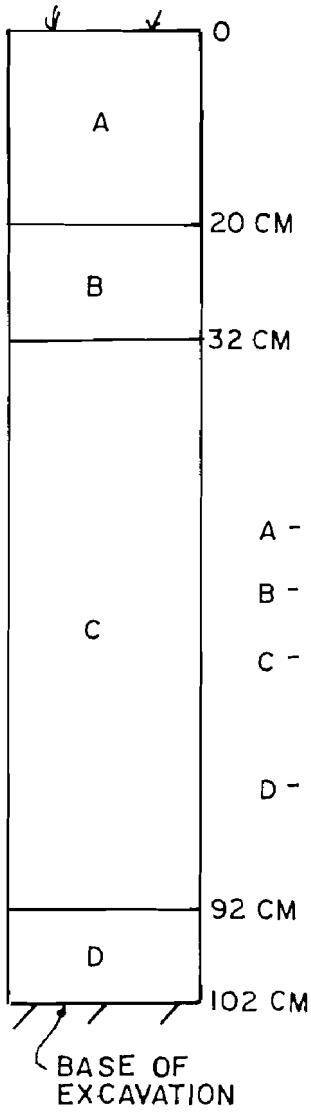
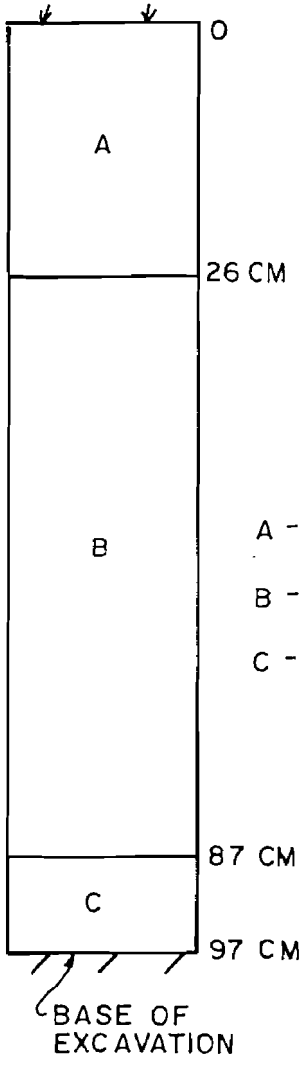
STP A-1



KEY

A - 10YR 4/2 DARK GRAYISH BROWN LOAMY SAND; FILL
B - 10YR 7/1 VERY PALE BROWN SAND; FILL
C - 10YR 5/3 BROWN SAND MOTTLED WITH 10YR 3/1 VERY DARK GRAY SAND; FILL
D - 10YR 7/6 YELLOW SAND; FILL

STP A-7



KEY

A - 10 YR 4/2 DARK GRAYISH BROWN LOAMY SAND; FILL
B - 10YR 5/6 YELLOWISH BROWN SAND; FILL
C - 10YR 8/3 VERY PALE BROWN CLAYEY SAND; FILL

FIGURE 7

BRIDGE 305 OVER LITTLE CREEK
REPRESENTATIVE STP PROFILES

V. Conclusions and Recommendations

GAI completed a Phase I archeological survey of the proposed Bridge 305 replacement project along 6th Street over Little Creek, Sussex County. The proposed project will involve the replacement of the existing structure and reconstruction of the existing roadway approaches. Cultural resource investigations included background research, surface and subsurface field investigations.

Background research indicated that the general project vicinity possessed a high potential for containing historic archeological resources. In particular, this included the potential discovery of cultural features and deposits associated with a nineteenth-century milling complex known as "Big Mills." This included minimally a gristmill, sawmill, and tannery. Examination of historic maps suggests that the original milldam was located approximately 183 meters (600 feet) upstream (south) of the existing bridge. While the survey vicinity exhibited a potential for containing prehistoric archeological resources, the narrow project ROW in conjunction with disturbance from the road prism, standing water, and steep terrain (adjacent to the existing road) suggested that it was unlikely that such resources would be uncovered.

Owing to the above field conditions, only the westernmost portion of the project area was suitable for subsurface testing. Field investigations identified a mortared brick foundation wall likely representing the former mill building immediately north of the project's APE. No associated structures such as a mill race, dam, or sluiceway were identified, nor was evidence of other features potentially associated with historically-documented buildings. Shovel testing with the ROW including several STPs placed in close proximity to the foundation uncovered disturbed fill deposits associated with the construction of the modern road prism. Only four artifacts (discarded) were recovered from a single shovel test including a glass fragment, a brick fragment, and two unidentifiable metal fragments. These materials do not represent an archeological site per se nor do they provide any information concerning the prehistoric or historic use of the project area.

Given the location of the brick ruin (mill building) outside the limits of construction, it will not be affected by planned construction activities. However, features related to the millseat such as a dam, race and/or sluiceway could be present beneath the existing bridge and road as could other historically-documented structures. While GAI recommended archeological monitoring during project construction to insure the documentation of any encountered archeological resources, no such remains were identified (Cunningham 2000). Therefore, no additional archeological investigations are recommended along the project corridor.

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APPENDIX A
ARTIFACT CATALOG - DISCARDS
BRIDGE 305 ON SIXTH STREET
SUSSEX COUNTY, DELAWARE
PHASE I ARCHEOLOGICAL SURVEY

Area	STP	Strat	Count	Description
TR-A	1	A	1	glass fragment
TR-A	1	A	1	brick fragment
TR-A	1	B	1	unidentifiable metal
TR-A	1	C	1	unidentifiable metal

Total 4

3/28/00